Description

System and process providing remote data capture with later upload to a real estate multiple listing service

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a non-provisional patent application for the provisional patent: US provisional patent application number 60/469,133, filed May 12, 2003, the disclosures of which are incorporated herein by reference.

BACKGROUND OF INVENTION

[0002] As a general rule, all real estate sold in the United States through a licensed real estate agent will be listed on at least one real estate database called a Multiple Listing Service (MLS). Individual real estate agents subscribe to the services of an MLS, and use the multiple listing service in an attempt to match buyers and sellers based on a standard and detailed list of property attributes. MLS attributes usually include all aspects of a home"s construc-

tion, style, neighborhood, area, school districts, lot dimensions, exterior features, agent"s comments, property directions, showing instructions, selling price, property taxes, closing and possession instructions, etc. MLS databases collect on the order of 500 to 700 pieces of discrete data about each property listed in the system. MLS system attempt to match buyer profiles requesting specific attributes about a property with "for sale" inventory in the MLS database. Real estate agents use these systems extensively when selecting potential properties to show a qualified buyer.

[0003] Today, all data about a property which enters the MLS system, starts off as the collection of said data on paper based forms while at the property with the seller. These forms are typically two or three legal sized sheets of paper with "check box" and "fill in the blank" attributes describing the real estate property. Once this data is collected by the agent, while at the seller"s property, the agent must then return to the office and enter the data into an MLS system. Sometimes, the agent gives the completed paper forms to a secretary who enters the data on the agent"s behalf.

[0004] This transcription of data from paper based forms to elec-

tronic forms often introduces errors during the transcription process. Sometimes, because the transcription effort is laborious, agents enter the majority of information from memory, only capturing the minimal amount of paper information necessary to complete a listing entry in the MLS system. This effort saving step also causes the introduction of many errors in the MLS data regarding a property. To complicate matters further, some real estate markets, like Atlanta, GA, have two or more competing MLS systems, thereby doubling the effort, and likelihood of error, necessary to get the listing data to both MLS systems.

[0005] In addition to the data errors entered through the transcription from paper or memory, many errors are introduced from the lack of standard definition in real estate data, and the lack of definition enforcement. For example, asking any five agents for the definition of a "den" will likely yield three different answers ranging from the true definition of "den" to the definition of a "living room" or "family room".

[0006] As a result of this high error rate, users of the MLS system must often compensate for common mistakes made by listing agents by varying their query parameters and buyer profiles in an attempt to locate appropriate properties for

their buyers.

[0007] Therefore, there is a need for a portable system which can collect all the discrete data elements of a multiple listing system in the filed at the "for sale" property, apply rules to the collected data for accuracy, provide consistent industry definitions for data elements, and publish the collected data directly to the multiple listing service(s).

SUMMARY OF INVENTION

[0008] The present invention describes a data collection and publication software system and process to electronically capture the repetitive, standardized, real estate MLS data, remotely in the field. While this system captures the data, it also checks the data for accuracy, and later uploads and publishes this data to a centralized real estate MLS database.

[0009] The preferred embodiment of this invention uses a general purpose portable computing device (PCD), such as those built around the Palm OS termed a Personal Data Assistant (PDA), or the Microsoft handheld Pocket PC operating system termed a Handheld PC (HPC). The PCD running specific application software, which enables the real estate agent to capture all the data elements present on the standardized paper-based real estate MLS form

used in their geographic region. This captured data can be stored, recalled, and edited on the PCD in battery backed semi-volatile memory until such time that it is uploaded into a regional MLS system. While the listing data for a property is resident on the PCD, the software application continually checks the data for accuracy and common mistakes. One accuracy check would be to ensure that any property listed as 1 ½ stories has a master bedroom on main level and at least one or more bedrooms on the upper level. Agents often mistakenly call a 1 ½ story house a 2 story house.

[0010] When a real estate agent is ready to upload the captured listing data into an MLS system, the PCD is then synchronized with a personal computer (PC) which is already running a special synchronization agent software program for the temporary local management of listing data. From the PC, running the special synchronization agent software application for the management of MLS data captured from the PCD, these real estate listings can be uploaded into one or more regional MLS systems.

[0011] The preferred embodiment of this invention uploads the managed MLS data from the PC over the Internet through another web application or web service designed to route

all uploads through one governing body. This governing body will be responsible to ensure the MLS data is properly entered into the destination MLS system. Likewise, this governing body distributes the electronic MLS forms for use on the agent"s PCD, and enforces Agent / Broker / Regional MLS business rules.

BRIEF DESCRIPTION OF DRAWINGS

[0012] FIG 1A Is Page 1 of 3, Single Family FMLS and GAMLS Dual-Entry Data Entry Form

[0013] FIG 1B Is Page 2 of 3, Single Family FMLS and GAMLS Dual-Entry Data Entry Form

[0014] FIG 1C Is Page 3 of 3, Single Family FMLS and GAMLS Dual-Entry Data Entry Form

[0015] FIG 2 Is a functional system showing all components for the collection, synchronization, and publication of MLS data to regional MLS database systems.

[0016] FIG 3 Are screen shots showing, by way of example, the management of multiple listing entries, the input of multiple listing data, and the selection of data from exclusive lists.

[0017] FIG 4 Are screen shots showing, by way of example, the input of free entry, handwritten data, and the selection of specific data from large managed lists.

[0018] FIG 5 Are screen shots showing, by way of example, the selection of "check box" true or false attributes, and the enforcement of business rules regarding the selection of such data.

[0019] FIG 6 Are screen shots showing, by way of example, the association of industry terms linked to the specific screen in question, and the capture of electronic signatures.

[0020] FIG 7 Is a sample database tables used in one embodiment of the present application.

[0021] FIG 8 Is a flow diagram showing application logic of the data collection application on the PCD.

[0022] FIG 9 Is a flow diagram showing data synchronization logic of the transfer of data from the PCD to an external web service

[0023] FIG 10 Is a flow diagram showing data correction and publication logic used in publishing the collected MLS data to the MLS systems of FIG 2 *27, 28, 29*.

DETAILED DESCRIPTION

[0024] This application is a non-provisional patent application for the US provisional patent application number: 60/469,133, filed May 12, 2003, the disclosures of which are incorporated herein by reference.

[0025] The detailed description of the present invention will uti-

lize examples from the Atlanta, GA, MLS marketplace. Atlanta, GA is one of the more complicated geographic areas because real estate agents in Atlanta, GA typically list their properties "for sale" with two competing MLS systems. These systems are FMLS (First MLS) and GAMLS (Georgia MLS).

[0026] FIG. 1A, 1B and 1C show the entirety of data collected by both FMLS and GAMLS on a standard "Dual Entry" data sheet. For this invention, these paper based data sheets are encoded into a specific data collection application on the PCD (Palm OS, PDA or Pocket PC, HPC) using a programming language of choice. The present invention utilizes Satellite Forms 5.2a for rapid program generation of data collection applications, but the inventors recognize applications performing the same function written using other programming tools and languages, such as C++ or Java. Each real estate market served by a regional MLS system will start with data collection on forms similar to FIG. 1A, 1B, and 1C which are tailored to the specific attributes of the regional MLS system.

[0027] FIG. 2 describes a system with the capability to capture all the MLS data present in FIG. 1A, 1B, and 1C on the PCD *21*. The PCD *21* is configured with a custom software ap-

plication to capture all the data present on the MLS data forms. The PCD *21* holds this MLS data in persistent storage and allows the real estate agent to edit the data for completeness and correctness until all data about a listing is collected.

[0028] In the described embodiment of this invention, the PCD 21 of FIG 2 is a personal data assistant (PDA), such as the Palm m515 or similar member of the Palm family. The PCD could also be a handheld personal computer (HPC) running the Microsoft Pocket PC operating system such as the Dell Axiom. The PCD could also be integrated into Palm and Pocket PC cellular phones, or could be an emerging Tablet PC running the Windows XP operating system such as the Protégé from Toshiba. The PCD could also be a next generation Linux PDA such as the Zarus from Sharp.

[0029] FIG 3, FIG 4, FIG 5, and FIG 6 show the PCD application responsible for collecting and managing the MLS data. In FIG 3, the custom PCD application manages a list of MLS properties *31* the real estate agent would like to publish to the MLS system(s). *31* allows the agent to create, edit, and delete property listings before uploading the listings to the MLS system. MLS data entries which are single selec-

tions from a finite exclusive list of choices, are represented as drop down selection lists in the PCD application *33* and *34*. Attributes such as public schools are typically large lists containing all the public schools in an MLS region. Once the county for the property has been selected *32*, the county is used to narrow large lists, such as "Middle School" down to a manageable list filtered by county. The selection mechanism of *41*, *42*, and *43* key on the county of the property and eliminate the need for the real estate agent to carry listings of schools, cities, MLS areas, and the like. To activate the large list mechanism, the agent simply taps or clicks the down arrow on the right side of the screen on the same line as the data entry blank. The large list selection screen *42* has a quick search feature which allows the agent to enter the first few letters of the desired entry and tap or click the Search button. Screen *42* shows the user has entered "m"and searched instantly to all schools beginning with "m". The list of available choices has previously been filtered down to only those entries applicable to the county of the property. *44* shows the sections of MLS data where the user is allowed to enter free form text. The user is automatically constrained, as in *44*, to the number of supported characters

in the MLS system. Data entry sections which allow the agent to pick from a list of attributes are show in *51*, *52*, and *53*. These data entry screens perform rule checking to ensure the agent has not selected more components than are allowed by the regional MLS system. *52* shows the warning message that the agent must select a maximum of N items from the list.

[0030] One common problem in the real estate industry is the lack of a consistent set of terms and definitions. The present invention addresses this industry need by bringing terms and definitions to the data input screens on the PCD. *61* of FIG 6 shows the screen for "House Style"in which the real estate agent is expected to know the difference between many house styles from the exterior appearance. Data entry screens where the data choices are not obvious *61* employ a context sensitive link "Terms"the agent can tap or click to pull a list of industry definitions. The user can scroll the list of definitions using the stylus or PCD scroll buttons to move the current selection *62* up and down the list looking at all the context sensitive definitions for the data input screen *61*.

[0031] It is a goal of the present invention to completely eliminate the need for paper based MLS data input sheets. To

facilitate this goal, the present invention employs electronic signature capture *63* of FIG 6 within the data capture application. Property sellers must sign the MLS data for accuracy in multiple places. The current invention captures electronic signatures or initials in all places where the seller would have signed the paper based form.

[0032] The PCD, *21* of FIG 2, collects all field data from the real estate agent in a local database system. Tables with layouts similar in structure to the MLS data sheets are employed to hold and edit the MLS data while the real estate agent is using the application. The database system and software allows the agent to collect and manage multiple properties *31* while in the field.

[0033] As new property listings are created, *31* of FIG 3, a database primary key is generated pseudo-randomly for the new property. As would be standard in the art of database design, all data related to the current property, collected in a plurality of individual database tables is linked back to the property through this primary key.

[0034] All the MLS data fields required for a complete listing are stored in the database tables of FIG 7 according to the program flow of FIG 8. As designed, there is approximately one database table defined for each screen of the

PCD application. From FIG 8, once the user has created a new property listing *85*, or selected an existing property to edit *86*, the user navigates through all screens using a Next / Previous button model viewed in *41* of FIG 4. Again from FIG 8, as the user completes a screen, the data entry application checks the contents of the screen for accuracy *87*. If the user is allowed to continue, the navigation is completed, until the user has entered all the data regarding the real estate property.

[0035] FIG 2 also describes a system for publishing and migrating the collected data from the PCD *21* to the destination MLS database systems *27*, *28*, and *29*. The system of FIG 2 utilizes synchronization software to synchronize the collected data from the PCD *21* to a personal computer, PC, *23*. Synchronization takes place between the PCD *21* and PC *23* over a standard synchronization data cable *22*, or via Infrared or Wireless radio frequency. Specific software on the PC *23* is employed to synchronize the data collected from the PCD *21* through the Internet *24* to a specific web application designed to hold the collected MLS data. Data is exchanged between the PC *23* and the web application *26* as XML documents. Synchronization from the PC *23* through the Internet *24* takes place over well de-

fined TCP/IP communication channels *2A*. During synchronization, the PC *23* sends all collected data to the web application server *26*.

[0036] Synchronization, according to FIG 9, starts when the user requests PCD synchronization with an Internet connected personal computer PC. The user initiates a synchronization session in the normal fashion supported by the PCD, and specific application software installed on the PC first pulls all user preferences *93* from the PCD and then pulls all application defined data tables *94* from the PCD. The specific application software for data synchronization on the PC iterates all the data in the collected tables *95*, *96* and composes an XML file describing the collected data. The specific application software on the PC for data synchronization then transmits the collected XML file *97* to the web application server *26* of FIG 2. The web application server receives the data, determines the correct responses, and delivers any program and data updates back to the synchronization software on the PC. The synchronization software on the PC receives any software and data updates *98* for the PCD and delivers the updates down to the PCD.

[0037] The web application server *26* of FIG 2 is a custom web

application which aggregates the collected MLS data from a plurality of real estate agents and publishes the collected data about each property to the regional MLS system configured for each real estate agent. The web application server *26* is capable of authenticating collected data and publishing the collected data to regional MLS systems. Publication of MLS from the web application server *26* again takes place over the Internet *24* through well defined TCP/IP communication channels *2A*. The web application is additionally configured to allow the real estate agent to edit the final data set before submitting to the regional MLS system. Once synchronization between the PC *23* and the web application server *26* is complete, the real estate agent is allowed to make final changes to the data set utilizing a web browser session from the PC *23* to the web application server *26*. This editing session allows the real estate agent to make any final changes, and allows the web application server to apply additional business rules designed to further reduce common mistakes made by real estate agents. The web application server *26*, in conjunction with a specific web application can apply these rules to the data set and present any conflicting or incorrect data fields to the real estate agent for correction.

Additional business rules which are enforced by the web application *26*, which are not possible on the PCD *21*, would be validation of property address, validation of legal property information, validation of subdivision names, validation of any fields which rely upon external systems for validation.

[0038] Once the real estate agent is satisfied with the data, the real estate agent may submit the data from the web application *26* to the regional MLS systems *27,28,29*. The web application *26* may enforce additional business rules which dictate another authority must review the real estate listing before submission to the MLS systems. Some real estate agents operate in an environment where a mandatory 3rd party reviews the data before submission. In this case, the web application *26* generates e-mail notifications to 3rd party reviewers alerting them that there is listing data to review and submit.

[0039] According to FIG 10, the web application server *26* of FIG2, receives the XML data *102* representing user preferences and multiple listing data. This XML data is imported into local memory and database structures *103* and additional business rules are applied to the data *104*. The submitting real estate agent is allowed to correct any data

mistakes iteratively *105,106* until all mistakes are corrected. The web application server then publishes the corrected data to the regional MLS systems *107*.

[0040] Submission of MLS data from the web application server *26* of FIG 2 to a regional MLS *27,28,29* may take place over the Internet if the regional MLS accepts data in this manner. Alternate methods of data submission may involve modem-to-modem data exchanges, ftp data exchanges, e-mail data exchanges, VPN data exchanges, SNA or X.25 communication links are also be supported in addition to TCP/IP *2A*.

[0041] Although the detailed description of the current invention utilizes examples based upon the single family data entry application. It should be noted that the current invention covers data collection and publication for all forms of real estate for sale, including but not limited to: single family residential, multi family residential, mobile homes, residential lots and lands, residential rental, common interest development, commercial lots and lands, commercial/industrial, business opportunity, and commercial rental.

[0042] The preferred embodiment of this invention uses the specific technologies and standards previously mentioned. The inventors have chosen these technologies because

they are the emerging industry standards of today. The inventors also acknowledge other embodiments where:

[0043] A single purpose device such as an intelligent barcode scanner like the Opticon 9723 or the Symbol CS 1504/2000 Consumer Memory Scanner are used in conjunction with barcode labels to replace the specific application software running on the general purpose PCD.

[0044] Another type of data input device with storage memory is used to replace the specific application running on the general purpose PCD.

[0045] The synchronization cable connecting the general purpose PCD with the PC *22* of FIG 2 is replaced with another communications medium (IrDA for example) for the purpose of uploading and synchronizing data from the PCD to the PC.

[0046] The specific web application and specific web services *26* of FIG 2 are replaced by direct connections from the PC *23* to the regional MLS systems *27,28,29*.

[0047] The Internet *22* of FIG 2 is replaced by direct dial modem, leased line, fax, or other medium providing a communication channel linking the PC *23*, the web application server *26*, and the regional MLS systems *27,28*,29